

Current Status of Radiation Oncology Service in Paraguay

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ABSTRACT

The cancer problem is increasing worldwide, with most new cancer cases and related mortality occurring in low- and middle-income countries (LMICs). Paraguay is a LMIC of approximately 7 million inhabitants and does not have official estimates of future radiotherapy needs. The aim of the study is to establish the current status of Radiation Oncology services in terms of access, human resources, infrastructure, equipment and types of treatments.

OBJECTIVES

- Establish the current status of Radiotherapy services in Greater Asuncion.
- Evaluate the capacities and needs of cancer care in the field of Radiation Oncology.
- A strategic plan for the development of radiotherapy in Greater Asuncion, which due to the characteristics of the country, can be projected at the national level, setting short term goals to improve care, quality of treatments and outcomes for the benefit of the Paraguayan cancer patients.

METHODS

- The Global Cancer observatory (GLOBOCAN) databases are used since Paraguay does not have a population-based cancer registry.
- The data reports collected over a five-year period (2015-2019) from the two main centers with multidisciplinary cancer management in the country: the National Cancer Institute (INCAN) and the Social Welfare Institute (IPS) are also used.

RESULTS

- GLOBOCAN 2018: it was estimated 11,244 new cases of cancer and 5,635 cancer deaths in Paraguay. The estimate of the optimal radiotherapy utilization rate was 50%. In 2018, the total number of patients with indication of Radiotherapy was 5622 patients.
- INCAN has one linear accelerator (linac) that should carry the load of 71.3% of cancer patients that are taken in through the public health system. IPS provides coverage to 21% of cancer patients that receive radiation therapy in the private sector. The other 7.7% of the population is covered by other types of private insurance. In 2018, the total number of patients treated with radiation therapy was 2532 patients leaving without coverage to 55% of new cancer patients.
- One of the main reasons for limited access is rurality. All private radiotherapy centers and INCAN are located in the metropolitan area of the capital city known as Greater Asuncion where 37.5% of the population resides. INCAN received 2,446 new cancer patients in 2018 and the most frequent pathologies were breast, cervical, prostate and lung cancer. 867 of these patients were treated with radiotherapy, however 445 patients were referred to an outsourced radiotherapy service. This follows the recommendation of 400 to 600 patients per year per linear accelerator.
- There are three private radiotherapy centers and INCAN which is the only public entity. There are six linacs in the country.
- Nationwide, the implementation of 3-dimensional conformal Radiotherapy as a standard treatment modality was in the year 2017.
- In addition, human resources needed in Radiotherapy are limited and most professionals work part-time in both public and private Radiotherapy centers
- Taking into account the population growth estimates of Greater Asuncion (0.15% per year) and the variation in the cancer incidence rate between 2012 (145/100,000) and 2018 (175/100,000), it is estimated 5% annual increase of the cancer incidence rate. The total projected cancer incidence for 2023 will be 14,500 new cases and the estimated demand for radiotherapy will be of 7,250 patients.

Figure 1. Map of Paraguay



Table 1. Human resources dedicated to Radiotherapy and percentage of time dedicated to different centers.

Staffing	Total number	Percentage of weekly workload dedicated to		
		INCAN	IPS	Private centers
Radiation oncologists	12	32%	21%	47%
Physicists	4	29%	0	71%
Dosimetrists	3	36%	0	64%
Radiation therapists	16	33%	0	67%

CONCLUSION

- There is a high demand for Radiotherapy treatments because the most frequent pathologies in the country are breast, cervical, prostate and lung cancer.
- Since the public sector absorbs approximately 71.3% of the country's cancer patients, the INCAN should increase to a minimum number of two more linacs in the short-term.
- The decentralization of Radiotherapy services should be evaluated to improve access to the rest of the Paraguayan population.
- More technology available will allow the treatment of more patients after meeting a learning curve.
- Strengthening and increasing human resources remains the main challenge for the country.

REFERENCES

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